



Chain Saw



JOHN DEERE

OPERATORS MANUAL

Chain Saw

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ENGLISH



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All information, illustrations and specifications in this manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.

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A John Deere ILLUSTRATION™ Manual

General Information

RECOGNIZE SAFETY INFORMATION

This is the safety-alert symbol. When you see this symbol on your machine or in this manual, be alert to the potential for personal injury.

Follow recommended precautions and safe operating practices.



MX,GI,EW1 -19-25JUL89

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UNDERSTAND SIGNAL WORDS

A signal word—DANGER, WARNING, or CAUTION—is used with the safety-alert symbol. DANGER identifies the most serious hazards.

Safety signs with signal word DANGER or WARNING are typically near specific hazards.

General precautions are listed on CAUTION safety signs. CAUTION also calls attention to safety messages in this manual.



O53,SIGNAL -19-07OCT85

TS187 -19-30SEP88



CAUTION: Read and follow all safety precautions in this operator's manual. Failure to follow instructions could result in serious personal injury.

U.L. listing certifies that the operator's manual and the chain saws in it meet the requirements of Voluntary Standard B175.1-1985 of the American National Standards Institute (ANSI) for gasoline-powered chain saws under 3.8 in.³ (cubic inch) displacement.

The Standard governs the design of front hand guards. It requires every chain saw to have a front hand guard.

**ANSI B175.1-1985
for your protection**

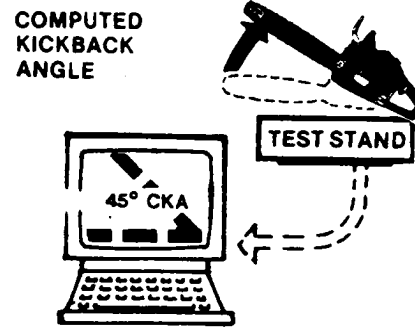
FRONT HAND GUARD



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The Standard requires chain saws under 3.8 in.³ (62.3 cm³) to have a maximum CKA (Computed Kickback Angle) no greater than 45 degrees. The CKA of a saw is computed from tests with a kickback-test machine plus data including engine power and chain speed. It should be noted that the kickback energy of a given chain saw is measured under laboratory conditions and certified by U.L. Any depreciation from those conditions may result in a higher CKA, and the Standard, therefore, requires that saws in this class (under 3.8 in.³) must have at least two of the following devices for protection against kickback.

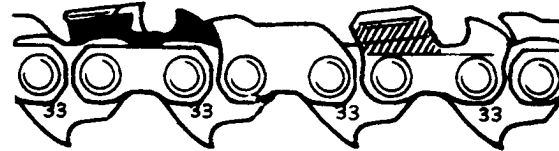


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LOW-KICKBACK SAW CHAIN

Low-kickback saw chain is chain which has met the kickback performance requirements of ANSI B175.1-1985 [safety requirements for gasoline-powered chain saws] when tested on a representative sample of chain saws below 3.8 in. specified in ANSI B175.1-1985.



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REDUCED-KICKBACK GUIDE BAR

In general, bars which meet this requirement have small radius noses or welded-tip construction. The John Deere asymmetrical-nose guide bars have their noses machined for a bar tip guard.

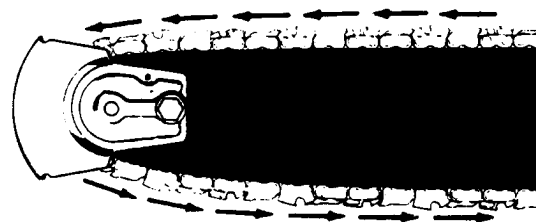


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BAR TIP GUARD

This is an anti-kickback device which covers the bar nose so that chain contact at the kickback-generating area of the nose does not occur. The John Deere bar tip guard is called "Kick Guard™ Device." With the device properly mounted on the bar nose, rotational kickbacks cannot occur. The device may also act to halt linear kickbacks.

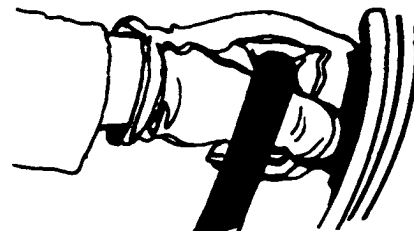


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CHAIN BRAKE

The John Deere chain brake is activated by pressure of the operator's left hand or wrist against the front hand guard. The front hand guard is part of the brake lever. A chain brake does not prevent kickback.



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Chain Sawing Terms

APPLE CORE—The appearance of a tree trunk which has been side-notched in order to reduce its diameter to within the saw's capacity to cut, with no need to remove the Kick Guard™ Device.

BINDING—Closing of the cut or shifting of the wood, possibly trapping the saw blade in the cut. Binding includes pinching. (See PINCH.)

BORING—The process of employing the nose section of the bar and chain to penetrate the inside of a log or tree, leaving exterior parts uncut to hold the wood from splitting, or to avoid binding of the saw blade. This is an extremely dangerous operation which should be attempted only by experienced professionals.

BRUSHING OUT—Cutting or otherwise removing undergrowth and brush in the cutting area and along the planned path of retreat.

BUCKING—Generally the standard cross cuts made to a section, a log, or felled tree. Variations include overbucking (cutting from top down) and underbucking (from underside).

BUMPER—The front of the powerhead and guide bar cover used as a work stop and pivot point when pivoting the saw blade into the wood.

BUMPER SPIKE—An optional spiked stop plate for holding the saw steady against the wood.

CANT HOOK—A combination hook and lever tool for rolling and positioning logs.

CHAIN CATCHER—A safety projection designed to protect the operator's right hand from being hit by a chain which has broken or flown off the bar during cutting.

CHAIN GUARD—A protective scabbard to cover the bar and chain when the saw is not in use.

CHAIN TENSIONER—The device which permits precise adjustment of the chain tension.

CHOKE—The engine control used to enrich the fuel mixture for cold starting.

CLEARING—Removing undergrowth and saplings from an area with a chain saw.

COMPUTED KICKBACK ANGLE (CKA)—The angle that is computed from testing on a kickback test machine.

FAN COVER—The air intake grille. It covers the fan and also contains part of the starter assembly.

FELLING BACK CUT—The final cut or series of cuts made to complete the hinge and fell the tree.

FRONT HAND GUARD—Provides protection against projecting branches and helps prevent left hand contact with the saw chain in the event the operator loses his grip on the handle. Do not operate a chain saw with a loose or broken hand guard.

HINGE—Uncut wood which holds the tree from twisting off the stump and guides its fall. The hinge is formed by making the back cut towards the directional control notch, coming approximately parallel to the notch but no closer than 2 inches (51 mm) away.

KICKBACK—The general term describing two highly dangerous reactions which can occur. See definitions of Rotation and Linear Kickback. For protection against kickback, keep the bar nose properly covered with the Kick Guard™ Device.

KICKBACK, LINEAR—A PUSH reaction, which can occur with the saw blade buried in the cut when the cut closes, pinching the chain along the top rails of the bar.

KICKBACK, ROTATIONAL—The violent reaction which occurs when the chain at the upper section of the nose is suddenly stopped, thereby dangerously driving the bar nose in an upward arc towards the operator.

LIMBING—The process employing cuts to remove limbs from a felled tree.

LINE, SIDE—Attached to a tether line, it is pulled obliquely to the tether line.

LINE, TETHER—A rope, chain or cable tied high up on a tree trunk for leverage, and used to tether the tree against a backward fall and to exert a steady pull to insure its proper fall. Tethering can be dangerous if improperly executed, if a tether line is not strong enough to withstand the pull, or the available pulling force is inadequate.

LOW-KICKBACK SAW CHAIN—A saw chain which has been demonstrated to meet the requirements of ANSI Standard B.175.1-1985.

NOTCH, FELLING—A vee or other shape cut-out made at right angles to the desired line of fall on the side the tree is to fall.

PINCH—Specifically the closing-in of the wood which pinches and stops the chain along the top rails of the bar. This can result in a violent PUSH or Linear Kickback reaction.

PLUNGE CUTTING—Another term for Boring with a chain saw. See definition of Boring.

PRUNING—The process of trimming branches on a living tree.

PUSH AND PULL—When cutting is done along the bottom rails of the bar, the reaction on the saw is a PULL away from the operator. When the top of the bar is used, the reaction PUSHES the saw towards the operator. Both are normal reactions which must be controlled by the operator.

REDUCED-KICKBACK GUIDE BAR—These are bars which have met the requirement of ANSI Standard B175.1-1985. Such bars have small radius noses to reduce the kickback area.

REDUCED-KICKBACK SAW CHAIN—A saw chain which does not meet the requirements of ANSI Standard B175.1-1985 for classification as Low-kickback Saw Chain, but which has been demonstrated to reduce kickback significantly.

SCABBARD—A sheath to cover the chain and bar during transport and at other times when the saw is not in use.

SCYTHING—A sweeping, close-to-ground, action with the saw blade to remove small gauge brush and weeds. Scything must not be done without the protection provided by the Kick Guard™ Device.

THROTTLE TRIGGER—Located in the rear handle, it is used to control the speed of the engine.

THROTTLE TRIGGER LATCH BUTTON—The control used to set the throttle for a fast idle speed, required to start a cold engine. The throttle can be unlatched by squeezing the throttle trigger.

THROTTLE TRIGGER LOCKOUT LEVER—A safety lever on the top of the rear handle which must be depressed before the throttle trigger can be activated. When the operator lets go of the rear handle the throttle will be locked in idle position.

THROTTLING UP—Depressing the throttle trigger to increase the engine speed (rpm).

Safe Operating Rules

KICKBACK SAFETY HAZARD



CAUTION: KICKBACK may occur when the nose or tip of the guide bar touches an object, or when the wood closes in and pinches the saw chain in the cut.

Tip contact in some cases may cause a lightning fast reverse REACTION, kicking the guide bar back towards the operator. Pinching the saw chain along the top of the guide bar may push the guide bar rapidly back towards the operator. Either of these reactions could result in serious personal injury by causing you to lose control of the saw.

Do not rely exclusively upon the safety devices built into your saw. As a chain saw user, you should take several steps to keep your cutting jobs free from accident or injury.

1. With a basic understanding of kickback, you can reduce or eliminate the element of surprise. Sudden surprise contributes to accidents.

2. Keep a good firm grip on the saw with both hands, the right hand on the rear handle, and the left hand on the front handle, when the engine is running. Use a firm grip with thumbs and fingers encircling the chain saw handles. A firm grip will help you reduce kickback and maintain control of the saw. Don't let go.

3. Make sure that the area in which you are cutting is free from obstructions. Do not let the nose of the guide bar contact a log, branch, or any other obstruction which could be hit while you are operating the saw.

4. Cut at high engine speeds.

5. Do not overreach or cut above shoulder height.

6. Follow manufacturer's sharpening and maintenance instructions for the saw chain.

7. Use only replacement bars and chains specified by the manufacturer, or the equivalents of these bars and chains.

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GENERAL HAZARDS

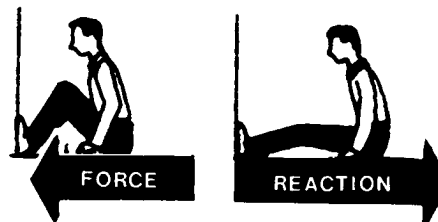
1. Do not operate a chain saw when you are fatigued.
2. Use safety footwear, snug-fitting clothing and protective gloves. Wear eye, hearing, and head protection devices.
3. Use caution when handling fuel. Move the chain saw at least 10 feet (3 m) from the fueling point before starting the engine.
4. Do not allow other persons to be near the chain saw when you are starting or cutting with the chain saw. Keep bystanders and animals out of the work area.
5. Do not start cutting until you have a clear work area, secure footing, and a planned retreat path from the falling tree.
6. Keep all parts of your body away from the chain saw when the engine is running.
7. Before you start the engine, make sure that the saw chain is not contacting anything.
8. Carry the chain saw with the engine stopped, the guide bar and saw chain to the rear, and the muffler away from your body.
9. Do not operate a chain saw that is damaged, improperly adjusted, or not completely and securely assembled. Be sure that the saw chain stops moving when the throttle control trigger is released.
10. Shut off engine before setting the chain saw down.
11. Use extreme caution when cutting small size brush saplings because slender material may catch the saw chain and be shipped toward you or pull you off balance.
12. When cutting a limb that is under tension, be alert for springback so you will not be struck when the tension in the wood fibers is released.
13. Keep the handles dry, clean, and free of oil fuel mixture.
14. Operate the chain saw only in well-ventilated areas.
15. Do not operate a chain saw in a tree unless you have been specifically trained to do so.
16. All chain saw service, other than the items listed in the operator's manual maintenance instruction, should be performed by competent chain saw service personnel. (For example, if an improper tool is used to hold the flywheel in order to remove the clutch, structural damage to the flywheel could occur and could subsequently cause the flywheel to burst.)
17. When transporting your chain saw, use the appropriate guide bar scabbard.
18. Spark arrester mufflers are standard on John Deere chain saws to reduce the possibility of forest fires. Do not operate the chain saw with a loose or defective muffler. Do not remove the spark arrester screen.

MX,OPRULE,EW2 -19-28JUL89

Forces You Must Control

This is about forces in chain sawing which must be controlled to avoid injury. Pros and cons of various safety devices are included in the discussion. Always remember that your best defenses are the exercise of caution and using the saw properly.

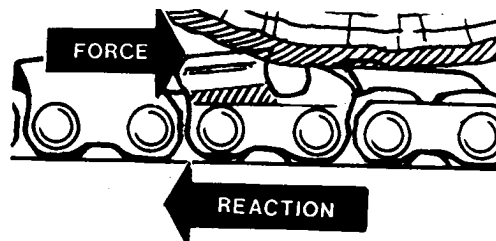
Here is an example of a reaction to an action: If you sit on the floor and push forcefully enough against a wall with your feet, your body will slide away from the wall.



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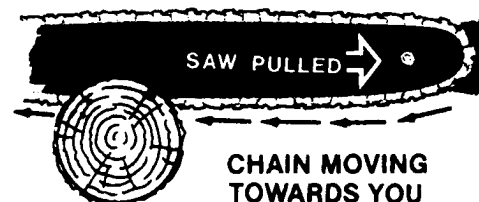
In chain sawing, when the chain forces its way into the wood from one direction, the reaction moves the saw in the opposite direction. (See diagrams of Push, Pull, and Kickback.) PUSH, PULL, and KICKBACK are terms for the direction a reaction takes.



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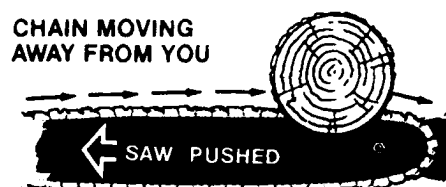
PULL-When you are cutting along the bottom rails of the bar where the chain is moving toward you, the chain saw will be pulled into the wood.



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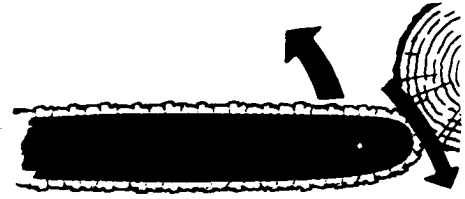
PUSH-Cutting along the top rails of the bar pushes the chain saw toward you, as in underbucking.



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ROTATIONAL KICKBACK-When the chain is moving **DOWNWARD** around the upper nose of the bar, solid contact there may dangerously drive the bar tip upward in an arc toward you. This is the extremely dangerous reaction called **ROTATIONAL KICKBACK**. When used alone, the term **KICKBACK** most always refers to the rotational kind.

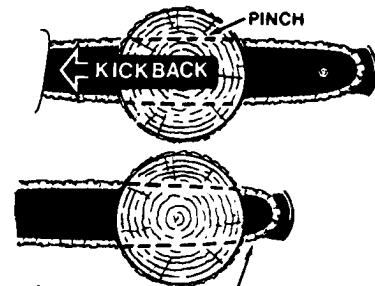


CHAIN MOVING DOWNWARD AT IMPACT

MX, FORCES, EW5 -19-28JUL89

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LINEAR KICKBACK-describes a sudden **PUSH** reaction occurring when the saw is buried in a cut which closes and pinches the chain along the top rails of the bar. The Kick Guard Device on your bar nose acts as a stop against linear kickback.



LINEAR KICKBACK MAY BE STOPPED BY KICK GUARD DEVICE

MX, FORCES, EW6 -19-28JUL89

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Rotational kickback is predictable and controllable. If the operator is not alert to the possibility of a kickback, it may come as a complete surprise. The possibility of a kickback can be greatest if the chain is not a low-kickback type nor the bar a reduced-kickback type. The best defense against rotational kickback is making sure the chain contacts nothing solid at the upper nose of the bar. This can be ensured by proper installation of the Kick Guard Device.

MX, FORCES, EW7 -19-28JUL89

PUSH and **PULL** forces are controlled by anticipating which reaction will happen and adjusting your position and stance to compensate.

FORCE OF GRAVITY- it must be dealt with in chain sawing. Maintain proper grip and stance. Keep good footing.



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Forces You Must Control

Don't cut off-balance; gravity may work against you.
Never reach too far out with saw.



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Make no cuts above chest height where control is difficult.

When bucking logs off the ground, be ready to throttle back and hold up the saw tip so that the saw will not follow through into your leg or foot after breaking into the clear.



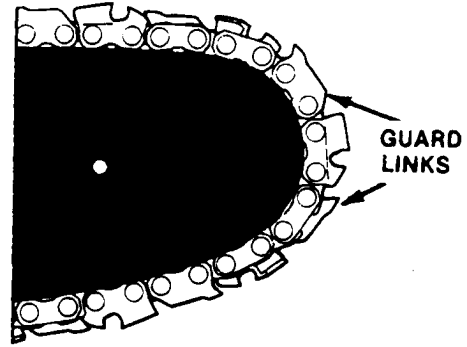
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Devices to Fight Kickback

LOW-KICKBACK SAW CHAIN

The low-kickback saw chain on your John Deere saw has depth gauges and guard links to reduce kickback. Depth gauges control the depth of cut. The guard links help to prevent the cutters from digging in too deeply at the bar nose. Low-kickback chain tends to resist penetration. It may skid or hop along the surface of the wood. Skidding into an obstruction can result in a kickback. Use two hands to control the saw. And make sure the chain enters the wood at the proper place to prevent skidding.

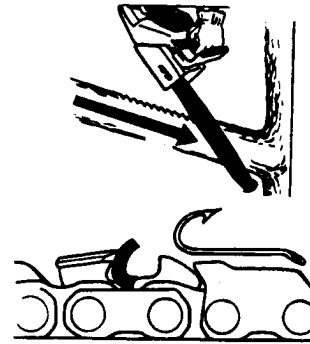


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Low-kickback chain gradually loses some of its kickback reduction ability even when properly filed. The following items will cause it to lose its kickback reduction ability rapidly:

- Depth gauges not set uniformly to correct depth.
- Cutters dull or uneven in filing angle or length.
- Cutters have been filed to a forward hook.
- Chain run too loose on the bar.
- Worn chain repaired with new cutters or side links, causing some cutters to take a larger bite than the others.



MX,KICKBACK,EW2-19-28JUL89

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Low-kickback saw chain is the only approved replacement chain for your saw. Be sure the replacement chain is labeled "Low-Kickback Saw Chain," and has been qualified under ANSI B175.1-1985 measurement process.

**REPLACEMENT
CHAIN**



LOOK FOR THE LOW-KICKBACK LABEL.

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NOTE: Proper chain tension cannot be maintained if:

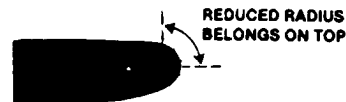
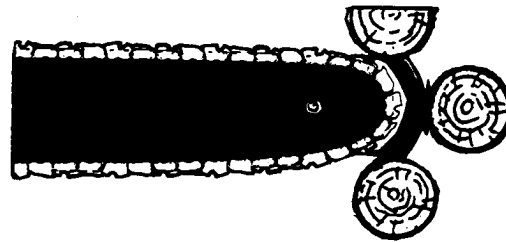
- Drive Sprocket is worn.
- Tension adjuster has not engaged the guide bar; guide bar shifts.
- Bar rails are in poor condition.
- Bar and Chain are improperly lubricated.

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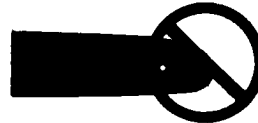
REDUCED-KICKBACK GUIDE BAR AND KICK GUARD™ DEVICE

Together, these two devices provide strong protection against kickback. As stated previously, there can be no rotational kickback when the Kick Guard Device is properly assembled on the bar nose. Linear kickback may stop if the Device is drawn against the wood. The reduced-kickback asymmetrical nose bars for your saw are commonly referred to as “banana-nose bars.” Their ability to partially reduce kickback is possible because the kickback-generating zone of the bar is very small. There are also reduced-kickback symmetrical nose bars with welded tips. If you wish to equip your saw with any bar other than manufacturer approved bars, be sure it falls within the size limitations specified for your saw, is labeled “Reduced-Kickback Guide Bar,” and is machined for a Kick Guard Device. The Kick Guard Device can be depended upon for protection only when it fits properly on the bar. Bent or damaged Guards must be replaced.

There is a need for the operator to become acquainted with the use of the Kick Guard™ Device. Once used to it, he may not want to cut without the tip protection provided by the Device. Normal wear as well as lack of maintenance will affect both saw performance and ability of the guide bar to reduce kickback. Inadequate lubrication can wear bar rails. Non-uniform chain filling can wear the rails to an uneven height. In particular, uneven height or worn-down rails, and wear inside the bar rails can permit excessive cutter side play, increasing the potential for kickback.



CAUTION
BE SURE GUIDE BAR IS CORRECTLY MOUNTED



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CHAIN BRAKE

The chain brake's function is to stop chain rotation after a kickback. It neither prevents nor reduces kickback. To protect the operator from being struck by a moving chain, it must retain the short stopping time capability it had when meeting ANSI 45° CKA requirement.

CAUTION: Do not depend on the chain brake for protection against kickback. Even with a chain brake, depend on your own good sense and proper cutting methods just as though there were no chain brake. Even with normal use and proper maintenance, the response time of the brake may lengthen. Recovery to 45° CKA ability eventually may require major rebuild or complete brake replacement.

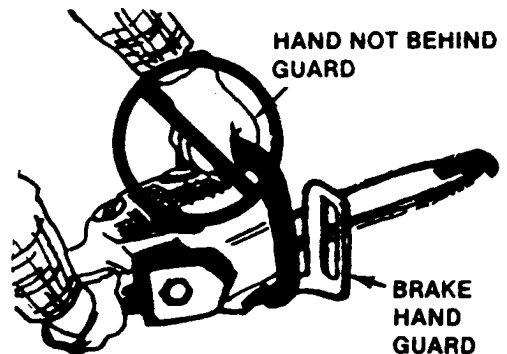
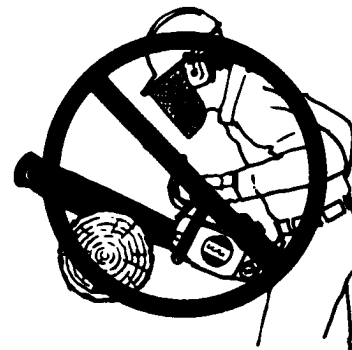


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The following may interfere with the brake's ability to protect the operator:

- Saw wrongly held too close to operator's body (no fault of the brake). Kickback time may not be too fast even for a perfectly maintained brake to work in time.
- The operator's hand may not be in position to contact the hand guard. Brake will not be tripped.
- Lack of proper maintenance lengthens the brake's stopping time, making it less effective.
- Dirt, grease, oil, pitch, etc. getting into the working parts of the mechanism may lengthen the stopping time.
- Wear and fatigue of the activating brake spring, and wear of the brake/clutch drum and pivot points may lengthen the brake's stopping time.
- A damaged hand guard and lever may render the brake inoperative.

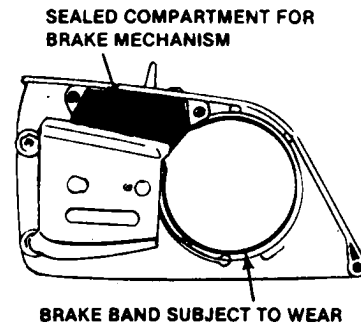


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The John Deere chain brakes are designed to retain stopping times as close as possible to their original times. The brake linkage is a compartment shielded from sawdust and oil. The brake and surrounding area will require regular and frequent cleaning. There will be a time when adjustment cannot compensate for wear. Your John Deere servicing dealer will be able to tell you when parts replacement or a complete brake assembly replacement is necessary. The John Deere Chain Brake is a device which cannot be replaced on your John Deere saw by another brand chain brake.



MX,KICKBACK,EW8-19-28JUL89

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Personal Preparations for Safe Operation

PHYSICAL CONDITION

You should be in good physical and mental health in order to handle your chain saw safely. Errors in judgment or execution can be serious or fatal. If you have any physical condition which strenuous work could worsen, check with your physician before using a chain saw. Do not operate when ill or fatigued, or under the influence of any substance or medication which could affect your vision, dexterity or judgment.



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PERSONAL EQUIPMENT

Always wear eye safety protection conforming to the ANSI Z87.1 (1979) Standard when operating a chain saw. Wood chips, dust and other debris can be tossed by the cutting chain into the operator's facial area. Goggles also offer protection in the event of the cutting chain hitting the operator in the eye area. If a ventilated face shield is worn, goggles must be worn underneath it. Also, you should protect your hearing with either "headset" type protectors or approved ear plugs. (Note: Stuffing ears with cotton is not recommended.) All persons who make part of their living using chain saws should be tested periodically for hearing deterioration.

Always wear a cap or hat when working under trees, at construction sites, or whenever using a chain saw. A safety "hard hat" is recommended. Wear heavy duty, non-slip gloves for improved grip, and also for protection against cold and vibration. Safety tip shoes or boots with non-slip soles should be worn. Kevlar lined boots, if available, should be worn to reduce injuries to the foot.

Clothing should be of sturdy, protective material. It should be snug-fitting to resist snagging, but roomy enough for freedom of movement. Trouser legs should not be flared or cuffed, and should be either tucked into the boot tops or trimmed short. Safety vests, leg chaps and logger's pants of Kevlar material are available.



HARD HAT

HEARING PROTECTION

EYE PROTECTION

**TRIM ATTIRE, BUTTONED
OR ZIPPED UP**

NON-SKID GLOVES

**I.D. WITH MEDICAL
RECORD**



**STURDY NON-SLIP
FOOTWEAR**

M53342 -19-17AUG89

MX,SAFOP,EW2 -19-28JUL89



CAUTION: Operate a chain saw only while wearing eye protection goggles conforming to ANSI Z87.1 Safety Standard.

Never wear loose clothing, unbuttoned jackets, flared sleeves and cuffs, scarfs, tie-strings, neckties, cords, chains, jewelry, etc. which could snag the saw chain or underbrush.

Never operate a chain saw when you are alone. Arrange to have someone remain within calling distance in case you need help.



MX,SAFOP,EW3 -19-28JUL89

M53343 -UN-16AUG89

PRECAUTIONS AGAINST VIBRATION AND COLD

It is believed that a condition called Raynaud's Phenomenon which affects the fingers of certain individuals, is brought about by exposure to cold and vibration. Accordingly, your John Deere chain saw has shock mounts designed to reduce the intensity of vibration received through the handles. Exposure to cold and vibration causes tingling and burning followed by loss of color and numbness in a victim's fingers. We strongly recommend your taking the following precautions because the minimum exposure which might trigger the ailment is unknown.



M53344 -UN-16AUG89

- Keep your body warm, especially the head and neck, feet and ankles, and hands and wrists.
- Maintain good blood circulation by performing vigorous arm exercises during frequent work breaks and also by not smoking.
- Limit the number of hours of chain saw operation. Try to fill a part of each work day with jobs other than chain sawing.
- If you experience discomfort, redness and swelling of the fingers, followed by whitening and loss of feeling, consult your physician before further exposing yourself to cold and vibration.

MX,SAFOP,EW4 -19-28JUL89

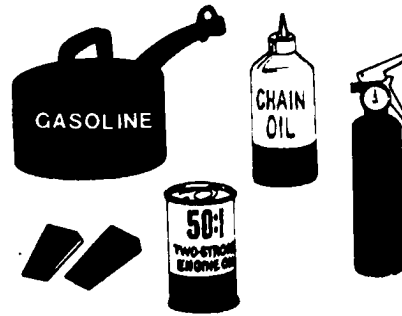
PRECAUTIONS IN HOT, HUMID WEATHER

Heavy logger's clothing can be a deterrent by increasing operator fatigue. Heat stroke is possible. Under these adverse conditions, you must judge whether wearing heavy protective clothing or lighter but less protective items bears the least risk. Or you might wisely choose to delay work until the temperature drops.

MX,SAFOP,EW5 -19-28JUL89

EQUIPMENT TO BRING ALONG

Fuel supplies should be carried in approved type fuel container. Bring an extinguisher or shovel in case of fire. Despite the precautions which can be taken, chain sawing, or just working in the forest, presents dangers. Accordingly, a first aid kit should be carried with you.



MX,SAFOP,EW6 -19-28JUL89

M53345 -19-17AUG89



CAUTION: Equipment, including your saw, should not be transported in the same compartment as passengers, and must be secured in some manner. Cover the chain and bar with a scabbard.



MX,SAFOP,EW7 -19-28JUL89

M53346 -UN-16AUG89

PROPER GRIP ON THE SAW

A firm grip is one requirement for chain saw control. The saw should always be held firmly with both hands whenever the engine is running.

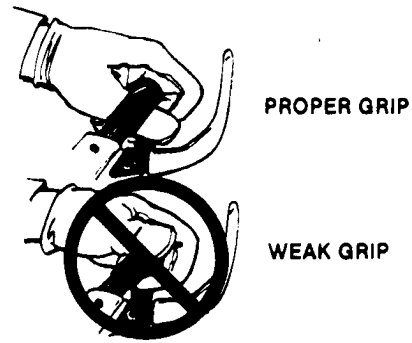
- Wear heavy duty non-slip gloves to improve your grip on the handles.
- Grasp the front handle firmly behind the front hand guard with your left hand. Use the proper grip with fingers encircling and the thumb on the underside. Thumb position is the key to a strong grip.



CAUTION: Always use a wrap-around grip. Never use a grip where the thumb and finger do not encircle the saw handle. If you use this improper grip, even a slight push or kick of the saw may dislodge your hand.

The hand guard is not a handle. Do not pick up or hold the saw by the hand guard.

- Grasp the rear handle in the same manner as the front handle. Use index finger to work the throttle trigger, and practice turning off the engine stop switch without losing your hold of the saw.



M53347 -19-17AUG89

MX,SAFOP,EW8 -19-28JUL89

PROPER STANCE, BALANCE, AND BODY POSITION FOR CUTTING

After starting, pick up the saw and proceed as follows:

CAUTION: Never hold the saw directly in front of your body where you would be in the line of a kickback. Always keep to the left of the saw.

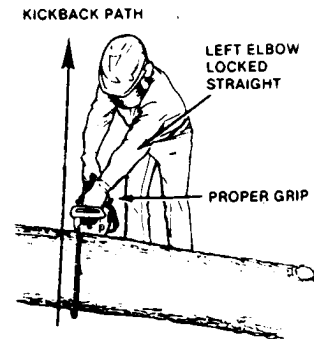
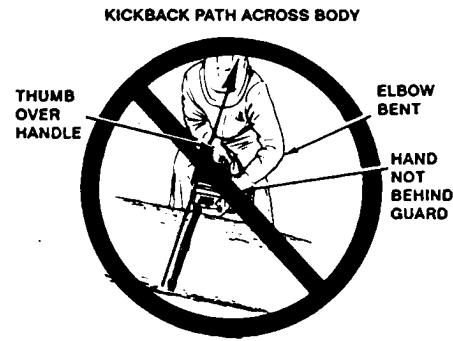
- Stand with your weight on both feet. Adjust your stance so as to be away from the saw chain and the line of cutting. When the saw is used without the Kick Guard Device, the cutting line becomes the potential path of a rotational kickback. See "Operating Without Kick Guard Device".

- Open the throttle to cutting speed before letting the chain make contact.

NOTE: If plunge-cutting or boring, start at part throttle and wait until the saw tip is buried deeply in the wood before slowly going full throttle.

- At completion of the cut, let go of the trigger, carefully lift the saw clear, and idle the engine before moving away.

CAUTION: Moving toward the next place to cut before throttling down and lifting the chain saw clear of the cut can cock the saw blade against the sides of the cut. This can result in a kickback. Always throttle down and lift the saw clear of the wood before moving.



MX,SAFOP,EW9 -19-31JUL89

M53348 -19-17AUG89

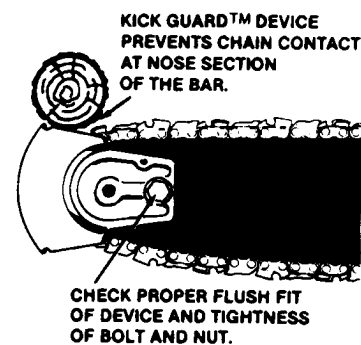
M53349 -19-17AUG89

Operating With Kick Guard™ Device Installed

CAUTION: The Kick Guard Device protects against kickback but does not insure you against other chain saw mishaps. Always wear protective articles and proper attire for chain sawing. Using the correct grip on the saw handles at all times. Position the saw properly, and maintain a balanced body position to the left of the saw. All these things are covered in “Personal Preparations for Safe Operation”.

MX,KICKGD,EW1 -19-31JUL89

Check that the Kick Guard mounting nut is tight before each use.



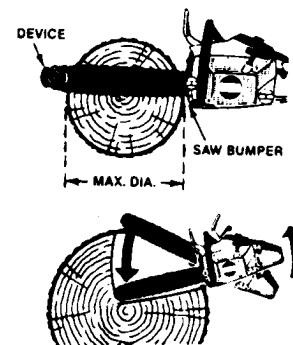
MX,KICKGD,EW2 -19-31JUL89

M53350 -19-30AUG89

The Kick Guard Device is wider than the saw chain and cannot be pulled into or through a cut. It will obstruct cutting unless it clears the wood completely.

CAUTION: If you plan to remove the Kick Guard Device to facilitate cutting, refer to “Operating Saw Without Kick Guard Device”.

There may be unusual situations where it is impossible to use the Kick Guard Device. These include some of the operations described in “Felling Large Trees” and “Limbing and Bucking”. Also, you may wish to remove the Device before inserting a wedge in the cut so that the saw blade may be pulled free afterward.

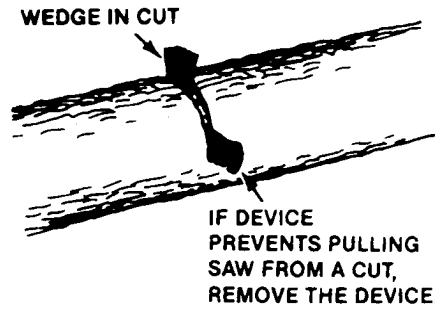


MX,KICKGD,EW3 -19-31JUL89

M53351 -19-30AUG89

Sometimes the way the log or tree is stressed will fool you and you may have to drive in a wedge to free up the saw. Before pulling the blade free, however, you will have to remove the Kick Guard Device. Don't lose the nut, washer, and bolt when you remove them.

NOTE: If plunge-cutting or boring: refer to "Felling Large Trees" for plunge cutting method. Refer to "Limbing and Bucking" for proper boring procedure.



MX,KICKGD,EW4 -19-31JUL89

M53352 -19-17AUG89

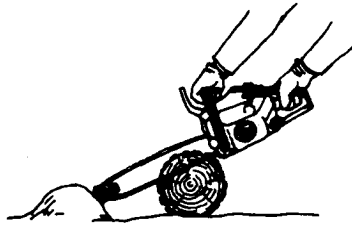
CAUTION: During felling, if a tree starts to fall, causing your saw to bind, **LEAVE THE SAW AND GET AWAY FAST!** The saw is replaceable—you are not!



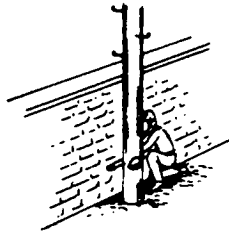
MX,KICKGD,EW5 -19-31JUL89

M53353 -UN-16AUG89

ADVANTAGES OF USING THE KICK GUARD™ DEVICE. DO NOT TRY THESE WITHOUT THE DEVICE!



PLACED AGAINST AN OBSTRUCTION
AND USED AS A BUMPER



CAN BE USED FOR CUTTING IN CLOSE
QUARTERS AS WHEN NEAR MASONRY,
WALLS, FENCES, ETC.



HELPS PROTECT CHAIN FROM
GROUND WHEN FLUSH-CUTTING.



HITTING AN OBSTRUCTION SUCH AS
ANOTHER TREE CAUSES NEITHER
KICKBACK NOR DAMAGE.



SCYTHING ACTION TO
CLEAR LIGHT BRUSH



CUTTING PILED BRUSH

-19-17AUG89

M53354

Illustrations at the top of this page show various cutting techniques which can be applied effectively and safely only when the Kick Guard™ Device is in place on the bar nose. Notice that the Device is often used to protect the saw chain as well as adjacent objects such as walls, fences, and trees. The device

often can be used up against an obstruction as a bumper plate.

When cutting piled up brush, don't stick the saw blade into the pile unless the Kick Guard Device is in place, and you can see that the nose is in the clear.

MX,KICKGD,EW6 -19-31JUL89

Even when using the Kick Guard Device, you must be alert to control the saw against the force of gravity. Maintain good footing and balance. Reaching above chest height is extremely hazardous. Twisting and falling limbs are a hazard which you must always watch out for.

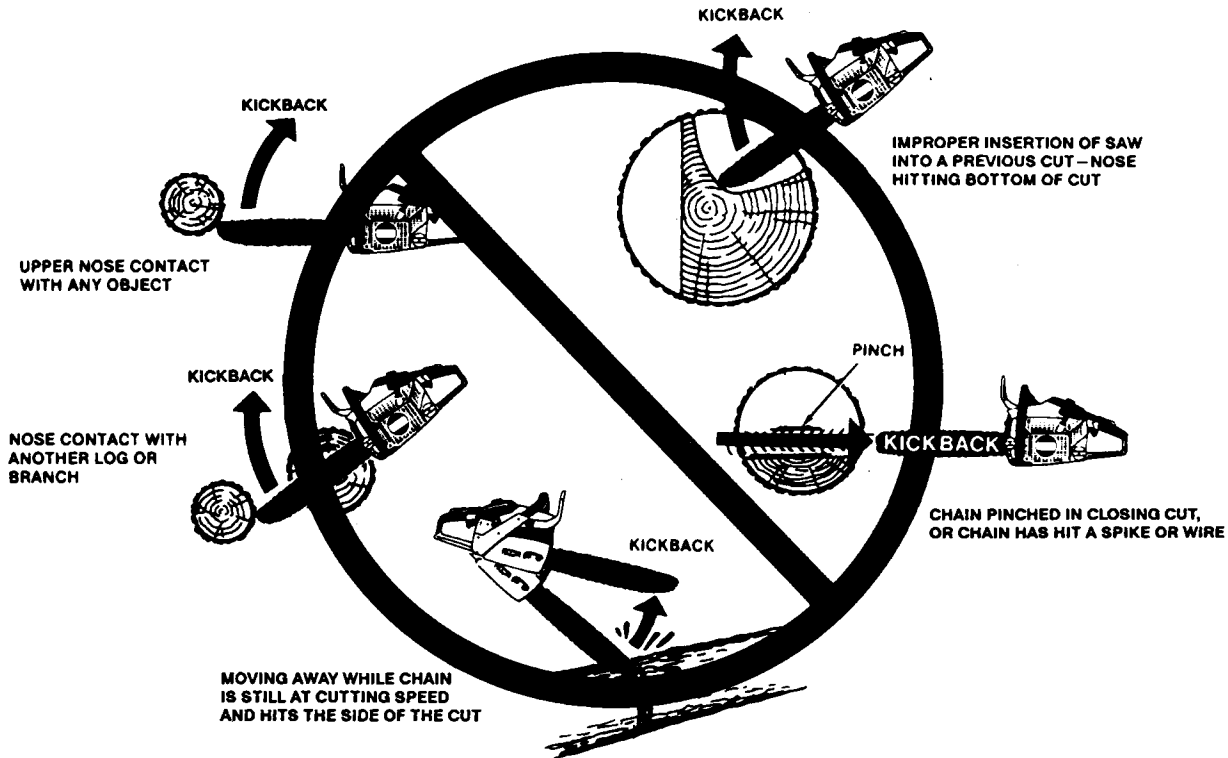


-UN-16AUG89

M53331

MX,KICKGD,EW7 -19-31JUL89

Operating Without Kick Guard™ Device



M53355 -19-17AUG89

CAUTION: Beware of the danger of kickback when using the saw without the Kick Guard Device. The Device may have to be removed when it is necessary to draw the bar nose through a cut, or bore into the wood as in plunge cutting. Study this

operator's manual and be sure you understand how to keep control of the saw.

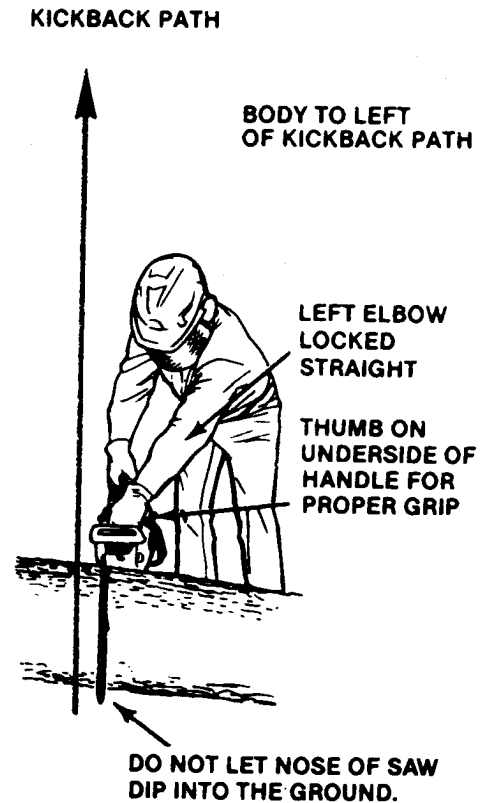
Study the illustrations of kickback, and avoid making these kinds of errors.

MX,NOKCKGD,EW1 -19-31JUL89

Hold the saw firmly with both hands. Make sure your left thumb is always on the underside of the front handle. Never over the top! Refer to "Personal Preparations for Safe Operations" for proper grip on the saw.

To guard against a sudden reaction of the saw, keep your left arm straight, with the elbow locked.

Do not let the nose of the saw come near any solid object while the chain is rotating. Never let the saw dip into the ground.



MX,NOKCKGD,EW2 -19-31JUL89

M53380 -19-17AUG89

Keep your body out of the path of a potential kickback as follows:

1. When making any vertical (bucking) cut, keep your body to the left of the guide bar.
2. When making felling cuts, stand to the left of the tree so that the direction of a kickback would be away from and not toward your body. If necessary to cut from the right side, angle the cut to keep your body out of the kickback path, and be extra careful to keep the bar nose in the clear.



MX,NOKCKGD,EW3 -19-31JUL89

M53381 -19-17AUG89

Operating Without Kick Guard™ Device

During all cutting, do not bend towards or otherwise crowd the guide bar.

Cut only one piece of wood at a time.

Do not thrust the nose of the saw into a pile of branches or dense brush where you cannot see whether the nose is in the clear.

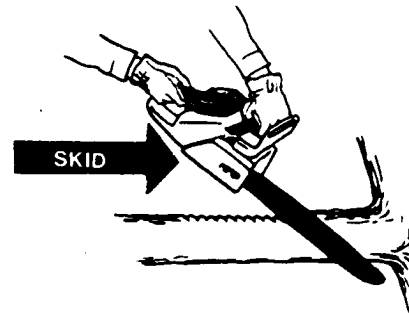


MX,NOKCKGD,EW4 -19-31JUL89

M53382
-UN-16AUG89

When starting a cut, be ready to control any tendency of the saw to skid as it attempts to penetrate the wood. Kickback could be a secondary reaction if the saw skids into an obstruction.

When completing an elevated bucking cut, be ready to hold up the saw as it breaks into the clear, so it will not cut your leg or foot, or contact an obstruction.



MX,NOKCKGD,EW5 -19-31JUL89

M53383
-19-17AUG89

Limit your cutting to the range within which you can control the saw fully. Don't reach out so as to lose your balance. Don't make any cut above chest height, because a saw cannot be controlled when held higher than that.



MX,NOKCKGD,EW6 -19-31JUL89

M53331
-UN-16AUG89

There is always an element of danger in boring, even when done by experts. Until you have become an experienced operator do not attempt to plunge cut or bore with the nose of the saw.

Make limbing and pruning cuts one at a time. Whenever possible, stand on the opposite side of the tree from limbs being cut, so the tree is a barrier between you and the saw.

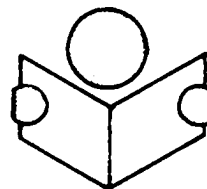
MX,NOKCKGD,EW7 -19-31JUL89

Woods Practices

Operating a chain saw safely requires a chain saw in proper working order, sound judgment, and knowledge of the methods which should be applied in each cutting situation. Do not let any person use your saw unless he has read this operator's manual and fully understands its instructions.

Never let children operate the saw.

Do not let helpers hold wood for you to cut. Keep helpers and bystanders a safe distance away.



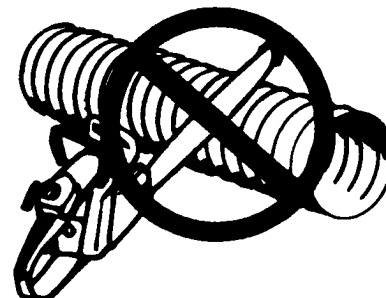
**BE SURE EVERY
OPERATOR
UNDERSTANDS THE
OPERATOR'S MANUAL**

MX,PRACTC,EW1 -19-31JUL89

M53384 -19-17AUG89

Use your saw only to cut wood or wood products. Do not cut solid metal, sheet metal, plastics or any non-wood materials.

Keep control at all times. Refer to "Personal Preparations for Safe Operation" for proper grip on the saw.



MX,PRACTC,EW2 -19-31JUL89

M53385 -UN-16AUG89

Stay on the uphill side when bucking or limbing logs which might roll when cut.



MX,PRACTC,EW3 -19-31JUL89

M53386 -19-17AUG89

Keep both feet on the ground. Do not work from off-the-ground positions.



MX,PRACTC,EW4 -19-31JUL89

M53387
-UN-16AUG89

Working from ladders is extremely dangerous because they can slip, and your control is limited. Working aloft should be left to the experts.

Do not work from metal ladders when there are power lines close by. Do not work on any tree if any of its branches may be in contact with power lines. If a tree hits a power line DON'T GO NEAR! Notify the power company as soon as possible.



MX,PRACTC,EW5 -19-31JUL89

M53388
-UN-16AUG89

Work only when there is adequate lighting to see clearly.

When there are several workers, they should be stationed where they will not interfere with one another. During bucking operations only one person should be working on a tree.

During felling of a tree, keep other persons away a distance of at least twice the height of the tallest

trees. This "rule" also applies when hung-up trees are being dragged down.

Before cutting, clear the area of materials likely to start brush fires or interfere with you or the saw. Be sure the path of retreat is clear. It is wise to plan two exit paths in case one becomes blocked during the fall.

MX,PRACTC,EW6 -19-31JUL89



CAUTION: If a tree starts falling toward you, or you see a branch ready to fall, **LEAVE THE SAW AND GET AWAY FAST!** Any tree with a hollow rotted trunk, thick loose bark, and dead branches is extremely dangerous to disturb by cutting. Such trees should be taken down by professionals.

Do not fell trees or go under them during periods of high wind or heavy precipitation. If a fallen or broken tree creates an emergency, leave removal to the professional tree removal services.



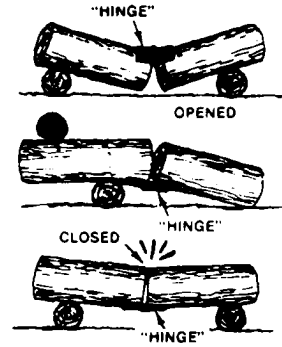
MX,PRACTC,EW7 -19-31JUL89

M53389 -UN-16AUG89

Pinching, Binding, and Splitting

Wind bends trees. Gravity bends logs that are not flat on the ground. A log weakened by a cut over 1/3 the log diameter is like two logs hinged together. The cut may either close or open wider, depending on how the log is lying.

In bucking logs, always make the weakening cut from the direction (opposite the "hinge" side) which causes the cut to widen. If made from the wrong side, the cut will close, binding the saw and pinching the chain.

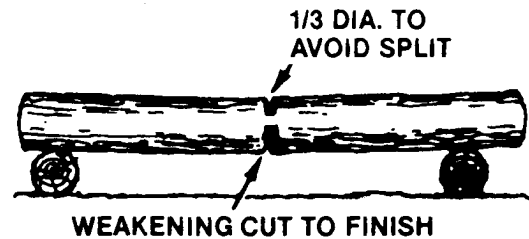


MX,PBS,EW1 -19-31JUL89

M53390 -19-17AUG89

If the log is under heavy stress, prevent splitting by making a shallow cut (up to 1/3 dia.) on the "hinge" side first. But, always finish with the weakening cut in a direction towards the "hinge" side.

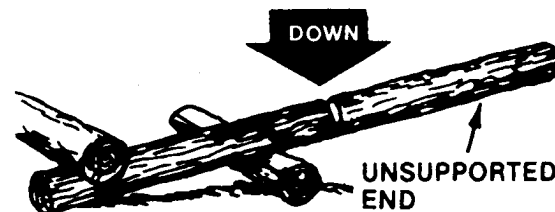
When the log is supported on both ends and is to be cut in between, underbuck (cut upward from the bottom side) for the finishing cut.



MX,PBS,EW2 -19-31JUL89

M53391 -19-17AUG89

When you wish to cut off an unsupported section from the end of a log, the weakening or finishing cut should be an overbuck (from top down).



MX,PBS,EW3 -19-31JUL89

M53392 -19-17AUG89

However, you may begin with a shallow underbuck to avoid splitting.



MX,PBS,EW4 -19-31JUL89

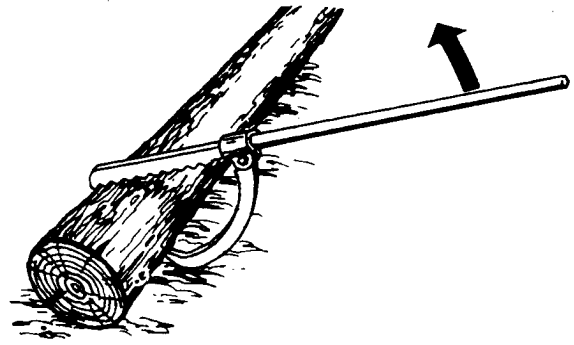
M53393 -19-17AUG89

Pinching, Binding, and Splitting

If unsure how a log lies, and how it will bend, change the lie. If too heavy to lift without strain on the back muscles, use a lever bar such as a cant hook to move or roll it.

NOTE: You may have to do this later on to free the saw, if you misjudged the lie.

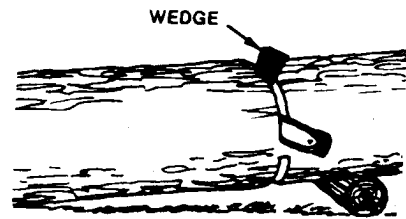
When a log is flat on the ground, overbuck as far through as possible without cutting into the earth. Then roll the log over to finish the cut.



MX,PBS,EW5 -19-31JUL89

M53394 -UN-16AUG89

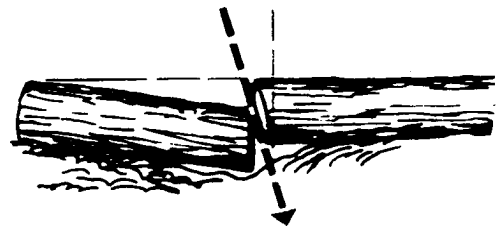
When the lie is such that the cut-off section will settle, guard against binding and pinching of the saw between the log sections. This can be done by inserting a soft wedge into the cut (after the chain is out of the way) to hold the cut open.



MX,PBS,EW6 -19-31JUL89

M53395 -19-17AUG89

In certain cases, the cut may be made on an angle so that it will widen as the log settles.



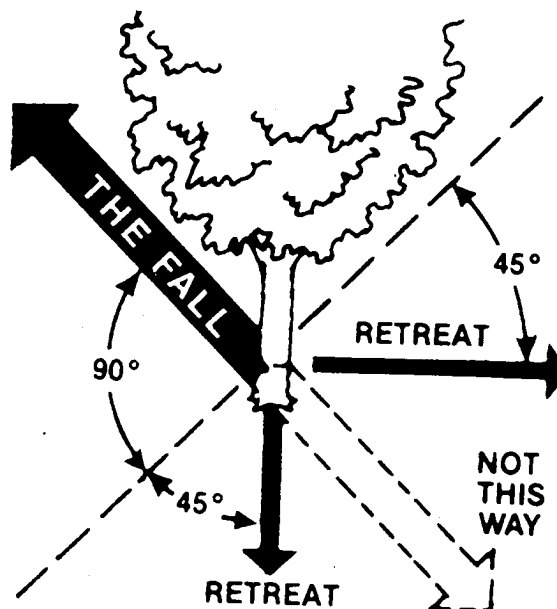
MX,PBS,EW7 -19-31JUL89

M53396 -UN-16AUG89

Felling Trees

PLANNING THE FALL

Check the tree and the weather. The trunk should be sound, not rotted and hollow. Look for loose branches which might fall on you during the cutting work. Prepare the working area and clear your escape route. This route should be to the rear, but not straight back. Going more to the side is safer. Decide whether wind conditions plus the natural lean and balance of the tree will enable you to fell the tree in the desired direction. At any risk of a wrong-way fall, consider using a wedge to help start the tree in the right direction. If the trunk is too small in diameter for insertion of a wedge, consider tethering the tree. The tether line must be attached before cutting is begun.

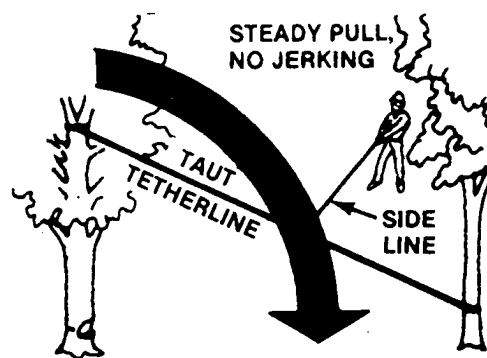


MX,FELLNG,EW1 -19-31JUL89

TETHERING

For good leverage, the tether line should be attached as high up the trunk as possible. Use a strong rope. (Do not use nylon rope because it stretches.) Run the rope in the planned direction of fall to a distance much greater than the height of the tree.

CAUTION: Tugging or jerking on the tether line can cause the tree to sway, and probably fall backwards. Always maintain constant tension on the tree with a steady pull on the rope to prevent swaying.

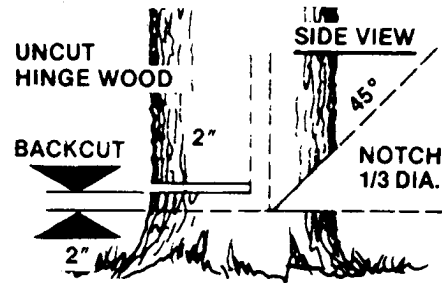


If possible, attach the end of the tether line to a tree in the direction of fall. Make the line taut. Then attach a second rope at the middle of the tether line. Pull this rope at right angles (90°) to the line of fall.

MX,FELLNG,EW2 -19-31JUL89

NOTCHING FOR DIRECTIONAL CONTROL

Make two cuts on the side the tree is to fall. Make the bottom cut first, at 90° to the intended line of fall and to a depth 1/3 of the trunk diameter. Then angle the top cut downward at a 45° angle to intersect the first cut at the 1/3 trunk diameter depth. Remove the cut piece.



MX,FELLNG,EW3 -19-31JUL89

M53399
-19-17AUG89

BACK CUTTING AND HINGING

It is important to leave a 2 inch (51 mm) wide strip of wood uncut between the notch and the back cut. This uncut strip acts as a hinge to determine the line of fall.

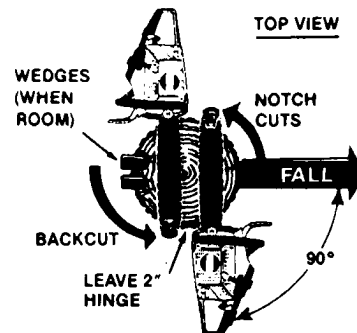
MX,FELLNG,EW4 -19-31JUL89

Make the back cut to come at least 2 inches (51 mm) higher than the intersection of the notch.

Make the back cut parallel to the notch so the hinge strip is of equal thickness from end to end.

CAUTION: If the back cut is too low, or the hinge is cut through, the tree will not be under control of the hinge and may fall in any direction. Be ready to leave the saw and GET AWAY FAST!

When the tree does not lean, insert a soft plastic or wooden wedge into the back cut when there is room behind the saw blade. This will hold the cut open. Then complete cutting to the hinge, and either continue cutting to fell the tree or drive in wedges to jack it up and over.



CUTTING FROM LEFT SIDE OF TRUNK



KICKBACK PATH AWAY FROM BODY

MX,FELLNG,EW5 -19-31JUL89

M53400
-19-17AUG89

M53401
-19-17AUG89

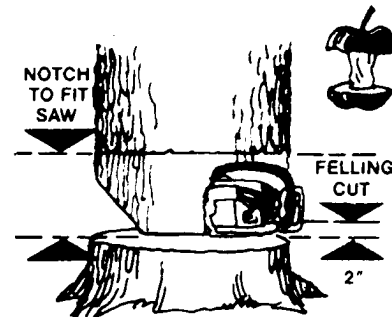
Felling Very Large Trees

Timber of a diameter exceeding the length of the saw blade can be felled by using one of the following methods. The “apple core” method shown here is the only one where the Kick Guard Device can be left on the guide bar to eliminate the chance of a kickback. However, this method should only be used to fell trees which stand quite straight, because a leaning tree cut in this manner is apt to split or “barber chair”. This can be very dangerous. “Barber chair” describes a stump having long wood fibers which were pulled out of the trunk as the tree fell. To fell a leaning tree, see “Felling Extreme Leaners,” below.

MX,LGTREE,EW1 -19-31JUL89

APPLE CORE METHOD

Cut notches in the sides of the trunk. The notch on the left side must be wide enough to accept the powerhead. See “Felling Trees” for standard procedures for the directional notch and felling cuts. If the powerhead does not fit, widen the side notch.



MX,LGTREE,EW2 -19-31JUL89

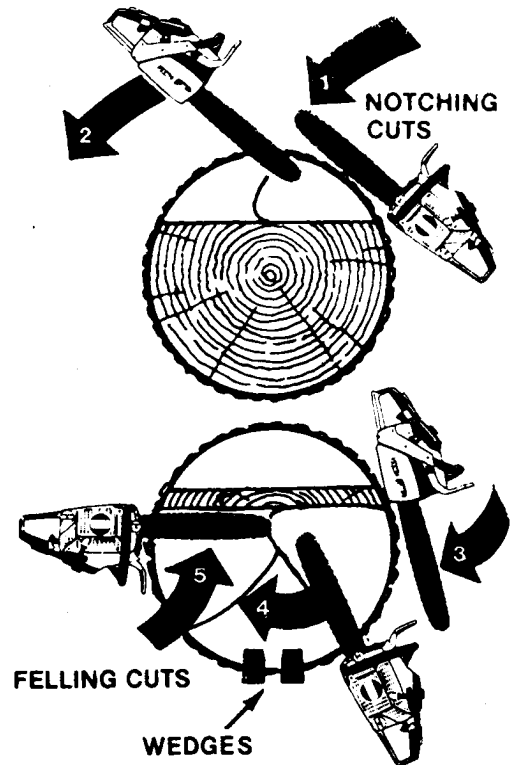
M53402 -19-17AUG89

DRAW-ACROSS METHOD

Standard procedures (see “Felling Trees”) are used here, except that the cuts have to be extended from one side to the other because the blade doesn’t fit across.

Start the lower cut of the notch by pivoting in from one corner to a depth of 1/3 trunk diameter. Then reverse the saw direction, reinsert saw in cut, and draw it across to the other corner. Complete the cut on that side. Do the same thing to make the intersecting top cut. Be careful to keep your body out of the kickback path when making this angled top cut. Remove the cut wood.

For the back cut, start at the corner at least 2 inches (51 mm) above the intersection of the notch. Plan to leave 10% to 12% of the trunk diameter uncut as hinge. Pivot the saw from the back towards the hinge. Reverse saw direction, reinsert saw into the cut, and draw it across the back of the tree. Cut the other side to complete the felling cut and the hinge. Follow standard felling procedures from this point.



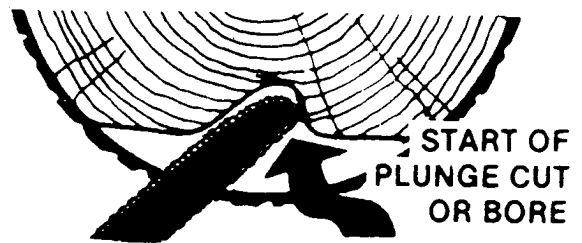
MX,LGTREE,EW3 -19-31JUL89

M53403 -19-17AUG89

PLUNGE CUTTING METHOD

This method uses the same steps for notching and felling cuts as described in “Draw-Across Method”.

CAUTION: Plunge cutting entails boring inside the tree. There is always a chance of kickback even when the plunge cut is expertly done.

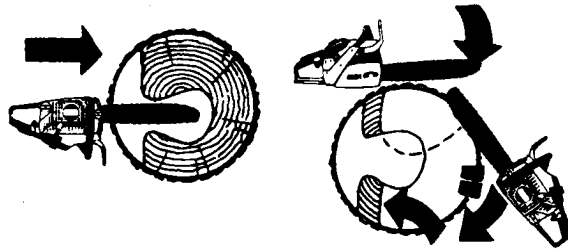


MX,LGTREE,EW4 -19-31JUL89

M53404 -19-17AUG89

After notching the trunk, stand at the left and aim the saw at the middle of the notch intersection. Throttle up to a slow chain speed. Make contact at the middle with the bottom edge of the bar, NOT THE BAR NOSE!

Pivot the saw in to a depth of at least 6 inches (15 cm) before smoothly increasing speed to full throttle. Then gradually shift cutting angle and pressure to bore straight into the trunk. When all the way inside, hollow out the trunk. BUT DO NOT CUT AWAY ANY MORE OF THE HINGE WOOD THAN NECESSARY. Now make the back cut to fell the tree.



MX,LGTREE,EW5 -19-31JUL89

FELLING EXTREME “LEANERS”

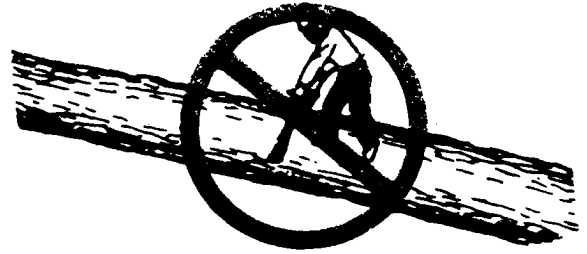
Do not assume that the lean makes notching for directional control unnecessary. The notch is needed, but should not be as deep as the standard 1/3 diameter notch. Before backcutting, make some notches through the sapwood on both sides of the trunk to relieve some of the stress which causes splitting. Stay on the alert for possible splitting, because a splitting tree is dangerous.

MX,LGTREE,EW6 -19-31JUL89

Limbing and Bucking



CAUTION: Do not walk on the trunk, or cut while standing on it.



MX,LMBBCK,EW1 -19-31JUL89

M53406
-UN-16AUG89

(Determine how the log or limb is tensioned. Apply the methods discussed in "Felling Trees" to avoid entrapment of the saw.) If the chain becomes pinched in a bind, **SHUT OFF THE ENGINE**. Free the bind by lifting the limb. Use levers, poles, etc. for lifting. Avoid back injuries.

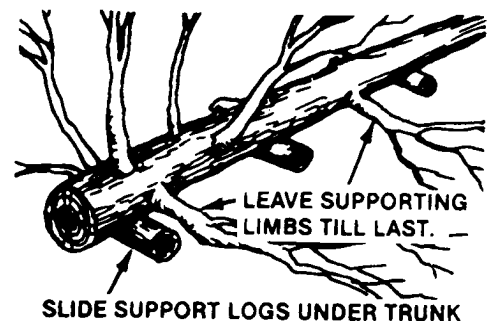
Do all the limbing with the Kick Guard™ Device properly assembled on the guide bar nose. The only time bucking should be done without the Kick Guard Device is when you feel you must do so and are able to prevent kickback on your own. When the trunk is held off the ground by its limbs, determine which of these are needed for support. Leave these while you cut off all the other limbs and branches.



MX,LMBBCK,EW2 -19-31JUL89

M53407
-UN-16AUG89

You will lose support of the limbs as sections of the trunk are bucked into logs. Roll some short logs under the trunk so you can continue off-the-ground bucking, which is easier than when the trunk is flat on the ground. Go to the high ground side of the trunk to buck off logs.



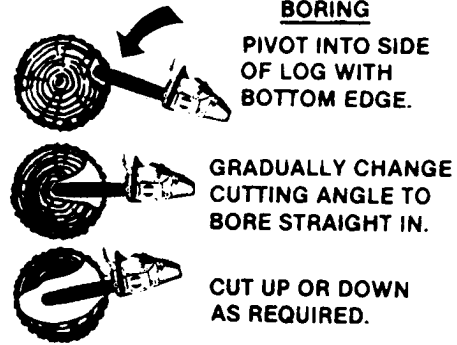
MX,LMBBCK,EW3 -19-31JUL89

M53408
-19-17AUG89

It may be necessary to bore into the middle of a log before the top or bottom are cut. Boring is a dangerous procedure where the bar tip guard cannot be used for protection. So be sure you have read about kickback in this manual and know how to avoid it before attempting to bore.

CAUTION: There is danger of kickback during boring. Be sure to maintain proper control of the saw and keep your body away from kickback path.

Before starting the bore, use the bottom edge of the saw blade to cut into the side of the log at slow chain speed. When the bar has buried itself quite deeply into the log, gradually increase chain speed and shift cutting pressure to bore straight into the log. Once the bar is inside the log, you can cut downward to the bottom, then finish by cutting upward through the holding wood at the top.



MX,LMBBCK,EW4 -19-31JUL89

CAUTION: Avoid windfalls. Windfalls are tangled branches, roots, and trees. Clean these out only by cutting from the perimeter, or by dragging logs and limbs into the clear before bucking. Be alert for springpoles and stay clear of them during cutting. A springpole can spring up suddenly when cut, or when the wood holding it down is cut away. A springpole can strike you or deflect the saw into your body.



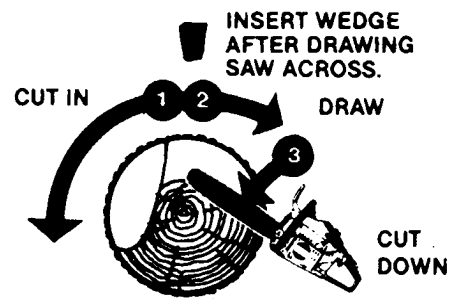
MX,LMBBCK,EW5 -19-31JUL89

CAUTION: Do not cut a tree in order to drop a tree that has lodged against it. Have lodged trees pulled down with proper power equipment.



MX,LMBBCK,EW6 -19-31JUL89

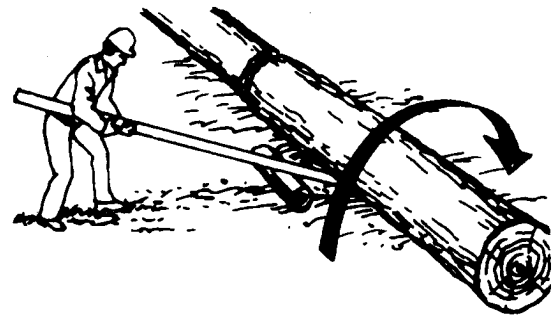
When a log of diameter exceeding the bar length is flat on the ground with no room for an underbuck, reach over and cut into the side. Then draw the saw over the top and overbuck deeply enough to insert a wedge. Reinsert the saw and overbuck as far down as possible without letting the chain hit the dirt.



MX,LMBBCK,EW7 -19-31JUL89

M53412
-19-17AUG89

Logs flat on the ground which are within the saw's capacity to cut with one overbuck should be bucked as low to the ground as possible. Keep the Kick Guard™ device on the bar and use a wedge when necessary to hold the cut open. Then roll the log with a cant hook or pole to expose the bottom for cutting.

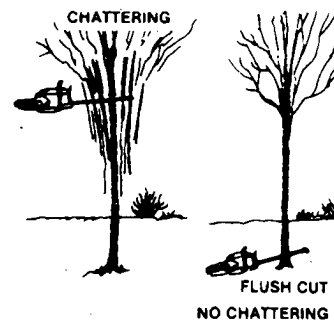


MX,LMBBCK,EW8 -19-31JUL89

M53413
-UN-16AUG89

Pruning Trees and Cutting Saplings

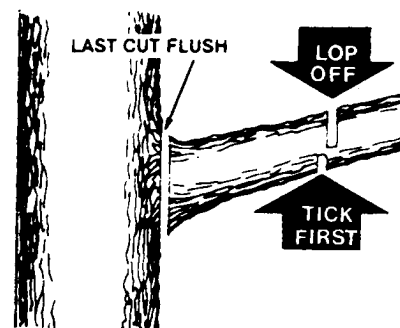
Whippy growth, such as saplings and tree branches, resists being cut. Be prepared for the chain to skid along the surface, and the material to chatter. This can result in a sharp pull on the saw. Be ready to resist this pull. With the Kick Guard™ Device in place on the bar, you can flush-cut brush and saplings to avoid this rough cutting. The pruning of small gauge branches and shrubs is better done with pruning saws or shears rather than chain saws.



MX,PRNCUT,EW1 -19-31JUL89

M53414 -19-17AUG89

When removing an unwanted limb, avoid stripping bark by ticking the underside through the sapwood about a forearm's length from the trunk. Then cut the limb off there. Now neatly cut off the stump flush at the trunk. Trim off any sharp protrusions of bark or wood so the wound can heal properly. Paint the wound with tar or a tree wound-sealer product.



MX,PRNCUT,EW2 -19-31JUL89

M53415 -19-17AUG89